LITHOLOGIC LOG

LOCATION MAP:

BLM-5-527•

BLM-8-418•

BLM-1-455 •

NORTH

NOT TO SCALE

NW 1/4 NW 1/4 SW 1/4 NW 1/4 S 33 T 20S R 3E

SITE ID: NASA-WSTF LOCATION ID: BLM-8-418

SITE COORDINATES (ft.):

N 231423.04 E 403768.31

GROUND ELEVATION (ft. MSL): 4556.33 (BRASS CAP)

STATE: NEW MEXICO COUNTY: DOÑA ANA

DRILLING METHOD: AIR-FOAM ROTARY

DRILLING CONTR.: LARJON

DATE STARTED: 13 JUNE 1988 DATE COMPLETED: 28 JUNE 1988

FIELD REP.: P. EGAN, C. WERDEN, S. DUBYK

COMMENTS: Total Depth (TD) = 452'. 14 3/4" borehole 0'-105', 9 7/8" borehole 105'-TD. Depth to bedrock = 418' (geophysical logs). Borehole drift = 23'.

LOCATION DESCRIPTION:

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
5			9.5	0'-432' cuttings	0'-105' SURFICIAL AND CLAY-RICH ALLUVIUM: The predominant color of the interval is pale yellowish brown (10 YR 6/2). Cuttings are large (up to 1 inch) blocky fragments in a clay/silt matrix. The lithology is an unconsolidated, poorly-sorted, clayey, silty gravelly alluvium. The interval is very clay and silt rich. Sandy soil is present at surface and decreases towards bottom of interval. Most of the fines lost when samples were washed. Clasts consist of limestone, rhyolite, siltstone, quartzite, and caliche.
10			21		0'-5' Sample is mostly clayey, silty sand with few lithic clasts.
15			6		10'-15' Significant decrease in cutting size. Cuttings are uniform in size and shape. Bit chattering and jumping at this interval. Presumed boulder present
20			5		15'-35' Clay present in amounts < 10%.
25			4		
30			4		30'-35' Clast size increases to 2 inches.
35			3		35'-50' Clay-rich zone present.
40			3		
45			3		
50			4		50'-60' Clay percentage is gradually lessening.

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
50			4		
55			4		
60			5		
65			4		65'-80' 10-15% fines present.
70			4		
75			11		
80			4		80'-85' 20% fines present.
85			3		85'-105' Clay-rich zone present.
90			5		
95			7		
100			5		
105			4		105'-425' ALLUVIUM (Santa Fe Group): There is a variety of color in the alluvium but the predominant color is dark gray (N3) when wet. Average cutting size is 0.3 inches with cuttings up to 1 inch. Cutting shapes range from angular chips to blocky fragments. The lithology is an unconsolidated to moderately consolidated (longer drilling times), poorly sorted, pebble to possible boulder polygenetic conglomerate. Contains clasts of light gray (N7) to dark gray (N3) micritic limestone, light
110			4.5		
115			4.5		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
115			4.5		105'-425' ALLUVIUM (Santa Fe Group) Continued: gray (N7) andesite, grayish red purple (5RP 4/2) porphyritic andesite (occurs more frequently in lower part of section with the plagioclase phenocrysts altering to epidote), white (N9) rhyolite with varying degrees of iron oxidation as rims around mafic phenocrysts (pyrite, magnetite ?), transparent to white to yellowish gray (5Y 8/1) quartzite, dusky red (5R 3/4) to light olive gray (5Y 5/2) siltstone and minor amounts of reddish granite and sandstone.
120			5		
125			4		115'-120' Silt present with clay.
130			5		
135			5		
140			3		
145			6.5		
150			3.5		
155			6		
160			12		
165			4		
170			4		
175			4		
180			5		180'-185' Decrease in cutting size to ~ .1 inches.

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
180			5		
185			5		
190			5		
195			4		
200			6		
205			5		
210			3		
215			3		
220			3.5		
225			5		
230			3.5		
235			7		235'-240' Limestone clasts displaying brecciation, calcite-filled fractures and micro-fractures.
240			10.5		
245			9		

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
245			9		
250			13		
255			11		
260			15		
265			13		
270			7		
275			10		
280			11		
285			11		
290			9		290'-295' Increase in amount of white rhyolite cuttings.
295			19		
300			30		
305			14		
310			15		

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
310			15		
315			19		315'-320' Decrease in siltstone and quartz content. Predominantly limestone and rhyolite present.
320			10		
325			10		
330			15		
335			28		
340			23		
345			26		
350			20		
355			47		355'-360' First occurrence of purple andesite.
360			23		
365			33		
370			29		
375			54		

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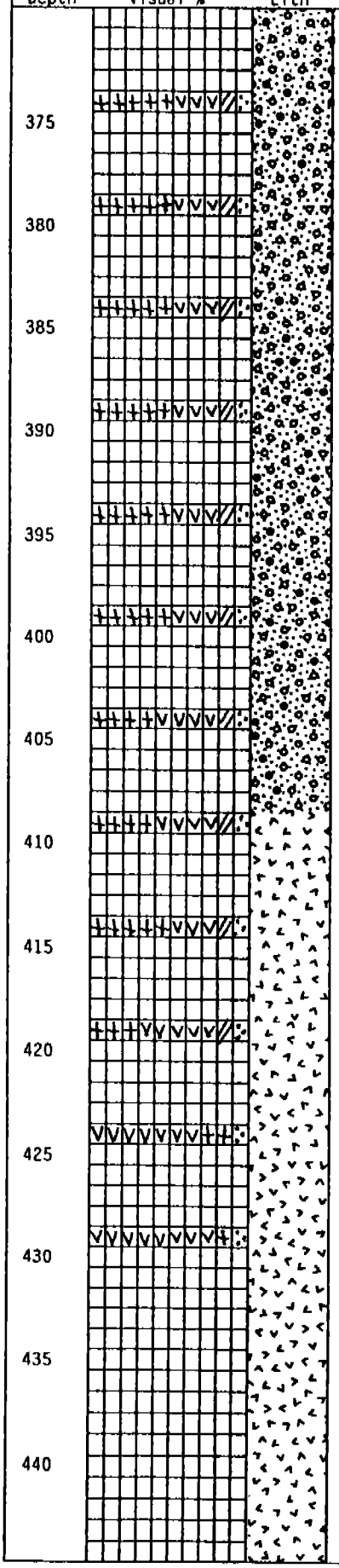

Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
54		
29		
48		385'-390' Purple andesite and grayish andesite with epidote becoming more noticeable in volcanic fraction.
43		390' Longer drilling times due to problems with stabilizers. Stabilizer diameter too large for hole. Cuttings are caught up in the reduced annular space and slow bit down. Repair stabilizers over weekend break (machine to a smaller diameter).
6		390'-400' See trace amounts of flow banded rhyolite cuttings in samples.
10		
21.5		
21		
7.5		410'-415' Drilling time has significantly decreased. Presumed bedrock contact, although samples blown out borehole remain predominately alluvium. (Gray tuff cuttings present, but less than 20% of sample).
7		
6.5		410'-452' VESICULAR TUFF (Cueva Tuff): Samples are pinkish gray (5 YR 8/1) tuff. Cuttings are an average of .3 inches in diameter, sub-angular to subrounded, and soft (some cuttings can be crushed between fingers). Tuff cuttings contain abundant lithic fragments that are dark brown to black or glassy. The lithology is a vesicular, lithic-crystal rhyolite (?) ash flow tuff. Uphole contamination by alluvial clasts is present in samples (up to 40% at top of interval, decreasing to ~ 10% at T.D.).
5		
stop time	432'-442' core	426' Water first detected.

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
					432'-442' **** core interval **** 100% recovery See attached description
440			begin time		
				442'-452' cuttings	442'-452' Cuttings are predominantly tuff, but some uphole contamination by alluvium is present in samples (~10%).
445			4		
450			4		
					Total Depth = 452'.
455					
460					
465					
470					
475					
480					
485					
490					
495					
500					
505					